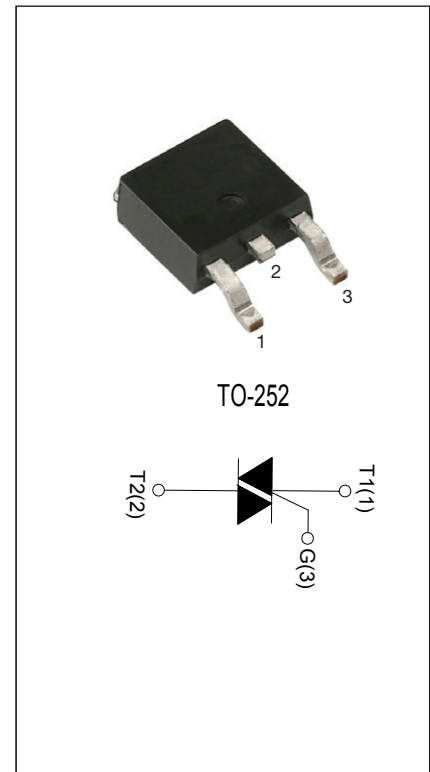


**BTB04-600D-D**
**MAIN FEATURES    4Q TRIAC**

| Symbol            | Value    | Unit |
|-------------------|----------|------|
| $I_{T(RMS)}$      | 4        | A    |
| $V_{DRM}/V_{RRM}$ | 600      | V    |
| $I_{GT1/2/3/4}$   | 5/5/5/10 | mA   |

**DESCRIPTION:**

The BTB04-600D-D triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers. By using an external plastic package. Package TO-252 is RoHS compliant.


**ABSOLUTE MAXIMUM RATINGS**

| Parameter  | Symbol       | Value   | Unit                   |
|--|--------------|---------|------------------------|
| Storage junction temperature range   | $T_{stg}$    | -40-150 | °C                     |
| Operating junction temperature range   | $T_j$        | -40-125 | °C                     |
| Repetitive peak off-state voltage ( $T_j=25^\circ\text{C}$ )   | $V_{DRM}$    | 600     | V                      |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )   | $V_{RRM}$    | 600     | V                      |
| RMS on-state current ( $T_c \leq 80^\circ\text{C}$ )   | $I_{T(RMS)}$ | 4       | A                      |
| Non repetitive surge peak on-state current (full cycle, $t_p=20\text{ms}$ , $T_j=25^\circ\text{C}$ ) | $I_{TSM}$    | 40      | A                      |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^\circ\text{C}$ )                               | $I^2t$       | 8       | $\text{A}^2\text{s}$   |
| Critical rate of rise of on-state current ( $T_j=125^\circ\text{C}$ )                                | $di/dt$      | 50      | $\text{A}/\mu\text{s}$ |
| Peak gate current ( $t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$ )                                  | $I_{GM}$     | 4       | A                      |
| Average gate power dissipation ( $T_j=125^\circ\text{C}$ )   | $P_{G(AV)}$  | 0.5     | W                      |

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^{\circ}\text{C}$  unless otherwise specified)

| Symbol               | Test Condition   | Quadrant     | Value |     | Unit             |
|----------------------|--|--------------|-------|-----|------------------|
| $I_{GT}$             | $V_D=12\text{V}$ $R_L=100\Omega$                           | I - II - III | MAX.  | 5   | mA               |
|                      |  | IV           |       | 10  |                  |
| $V_{GT}$             |  | ALL          | MAX.  | 1   | V                |
| $V_{GD}$             | $V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$<br>$R_L=100\Omega$ | ALL          | MIN.  | 0.2 | V                |
| $I_L$                | $I_G=1.2I_{GT}$  | I - III - IV | MAX.  | 60  | mA               |
|                      |  | II           |       | 100 |                  |
| $I_H$                | $I_T=500\text{mA}$   |              | MAX.  | 60  | mA               |
| dV/dt                | $V_D=2/3V_{DRM}$ $T_j=125^{\circ}\text{C}$                 |              | MIN.  | 500 | V/ $\mu\text{s}$ |
| (dl/dt) <sub>c</sub> | $T_j=125^{\circ}\text{C}$                                  |              | MIN.  | 10  | A/ms             |

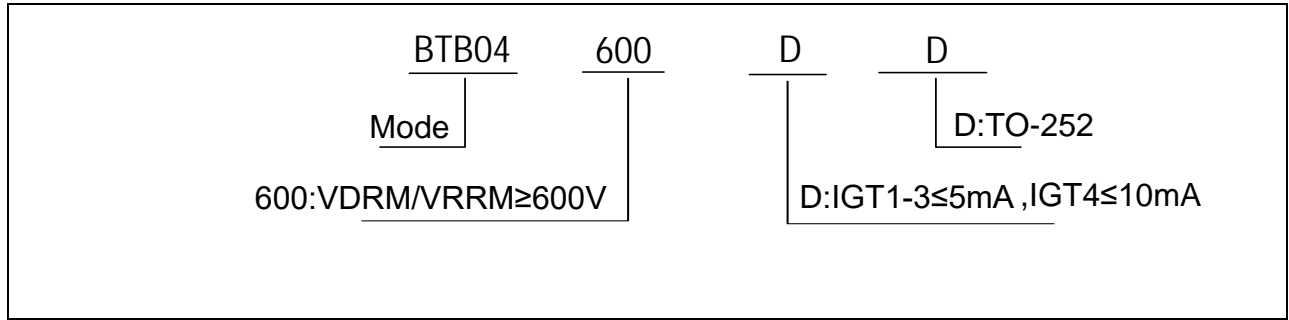
**STATIC CHARACTERISTICS**

| Symbol    | Parameter                               |                           | Value(MAX.) | Unit             |
|-----------|---|---------------------------|-------------|------------------|
| $V_{TM}$  | $I_{TM}=6\text{A}$ $t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.55        | V                |
| $V_{TO}$  | Threshold voltage                       | $T_j=125^{\circ}\text{C}$ | 0.92        | V                |
| $R_D$     | Dynamic resistance                      | $T_j=125^{\circ}\text{C}$ | 36.6        | $\text{m}\Omega$ |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$             | $T_j=25^{\circ}\text{C}$  | 5           | $\mu\text{A}$    |
| $I_{RRM}$ |   | $T_j=125^{\circ}\text{C}$ | 0.5         | mA               |

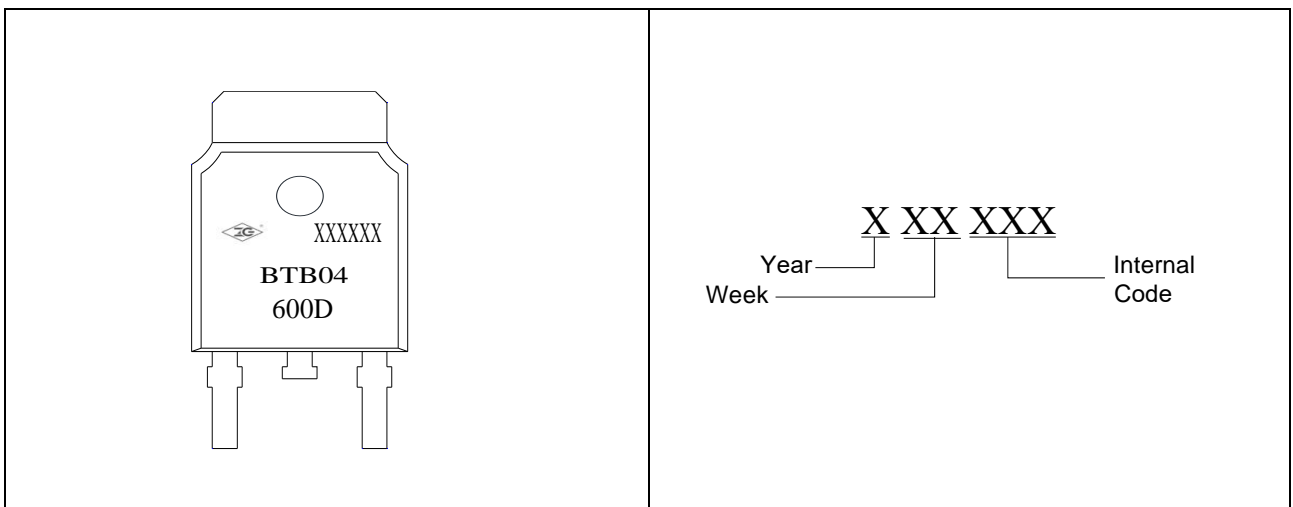
**THERMAL RESISTANCES**

| Symbol        | Parameter             | Value | Unit                        |
|---------------|-----------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (AC) | 2.05  | $^{\circ}\text{C}/\text{W}$ |

**ORDERING INFORMATION**



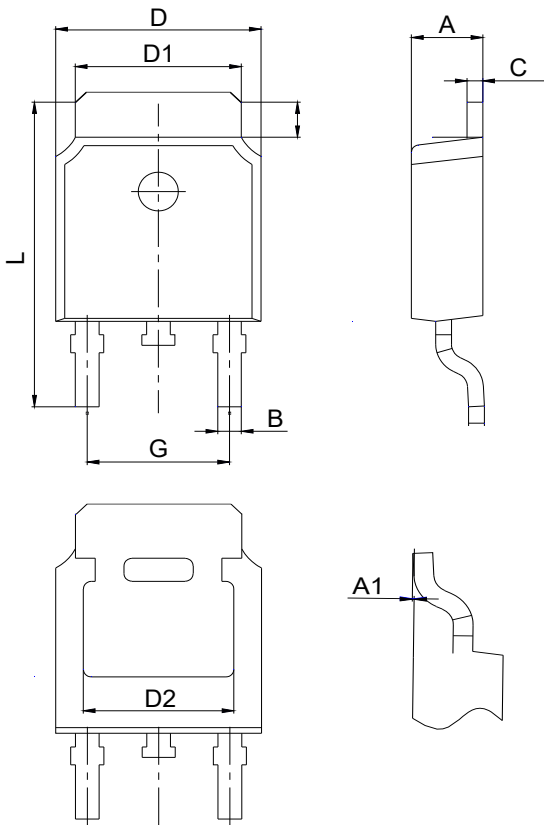
**MARKING**



**ORDERING INFORMATION**

| Order code   | Voltage<br>V <sub>DRM</sub> /V <sub>R<sub>RM</sub></sub> (V) | IGT(mA)      |    | Package | Base qty.<br>(pcs) | Delivery mode |
|--------------|--|--------------|----|---------|--------------------|---------------|
|              |  | I - II - III | IV |         |                    |               |
| BTB04-600D-D | 600  | 5            | 10 | TO-252  | 2500               | REEL          |

**PACKAGE MECHANICAL DATA**

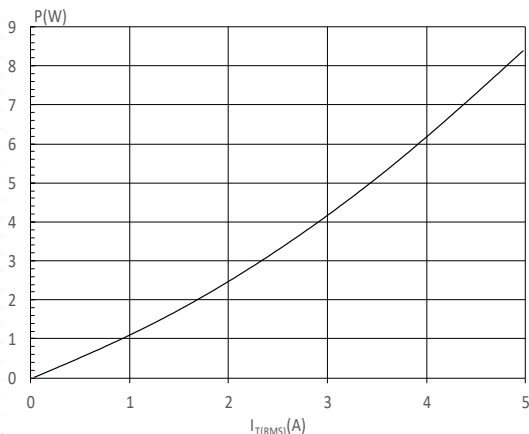


**TO-252**

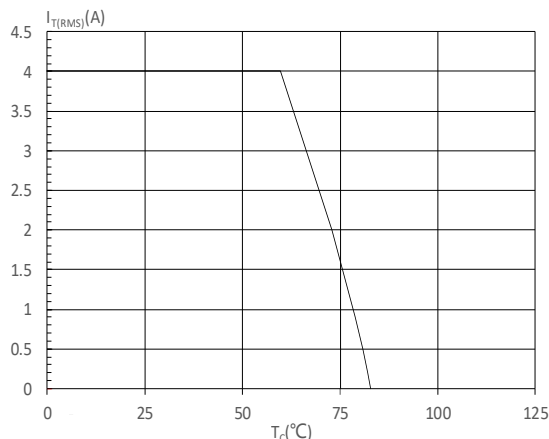
| Ref. | Dimensions |       |       |
|------|------------|-------|-------|
|      | Milimeters |       |       |
|      | Min.       | Typ.  | Max.  |
| A    | 2.10       | 2.30  | 2.50  |
| A1   | /          | /     | 0.13  |
| B    | 0.47       | 0.67  | 0.87  |
| C    | 0.30       | 0.50  | 0.70  |
| D    | 6.40       | 6.60  | 6.80  |
| D1   | 5.13       | 5.33  | 5.53  |
| D2   | 4.830REF   |       |       |
| G    | 4.37       | 4.57  | 4.77  |
| L    | 9.80       | 10.00 | 10.20 |

| PACKAGE | OUTLINE | REEL (PCS) | INNER BOX (PCS) | PER CARTON |
|---------|---------|------------|-----------------|------------|
| TO-252  | REEL    | 2500       | 5,000           | 54,000     |

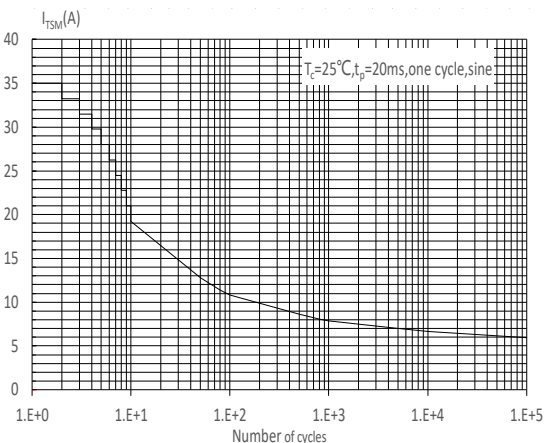
**FIG.1** Maximum power dissipation versus RMS on-state current



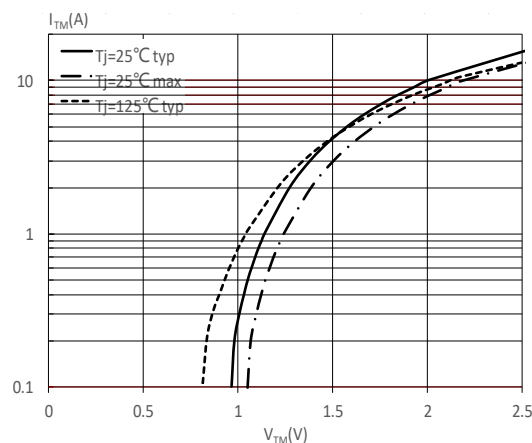
**FIG.2:** RMS on-state current versus case temperature



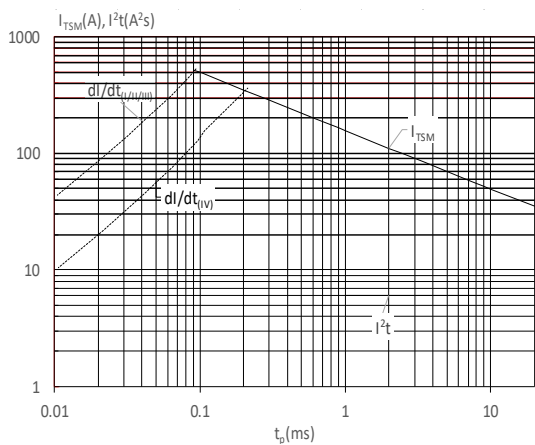
**FIG.3:** Surge peak on-state current versus number of cycles



**FIG.4:** On-state characteristics



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( I - II -III:  $di/dt < 80\text{A}/\mu\text{s}$ ; IV:  $di/dt < 40\text{A}/\mu\text{s}$ )



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

